NAMA : YUNITA ARDIYANTO

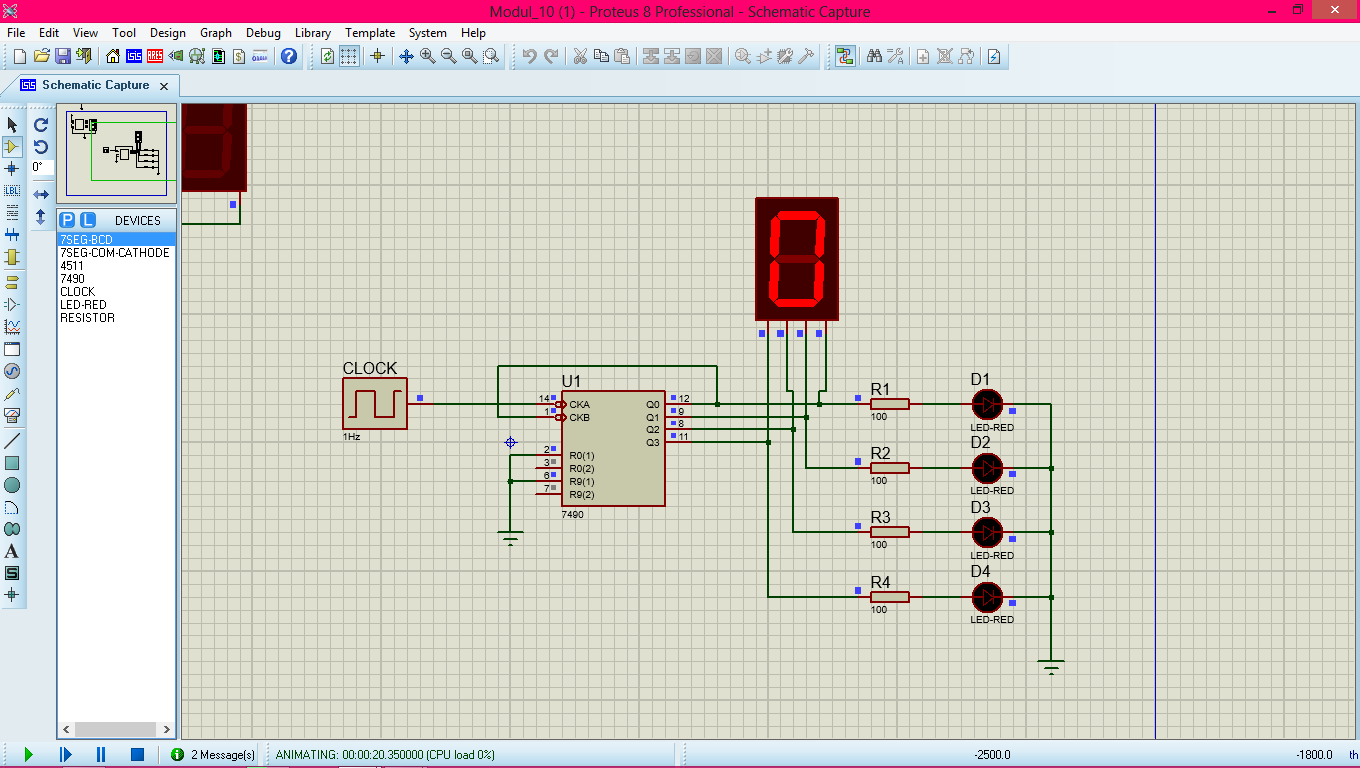
NIM : L200150093

MODUL 10

**Percobaan 1. Rangkaian Clock Counter**

1. Buat counter dibawah ini !

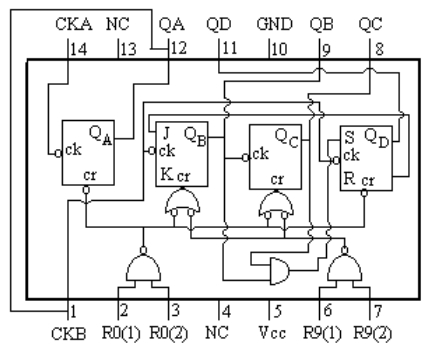
Gunakan IC 7490 (Decade Counter), 7segment (7seg-BCD-red), resistor (res)



1. Isi kolom kosong pada tabel!

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Clock | Output LED | | | | Output Seven Segment |
| D1 | D2 | D3 | D4 |
| 1 | 0 | 0 | 0 | 0 | 0 |
| 2 | 1 | 0 | 0 | 0 | 1 |
| 3 | 0 | 1 | 0 | 0 | 2 |
| 4 | 1 | 1 | 0 | 0 | 3 |
| 5 | 0 | 0 | 1 | 0 | 4 |
| 6 | 1 | 0 | 1 | 0 | 5 |
| 7 | 1 | 0 | 0 | 1 | 6 |
| 8 | 1 | 1 | 1 | 0 | 7 |
| 9 | 0 | 0 | 0 | 1 | 8 |
| 10 | 1 | 0 | 0 | 1 | 9 |

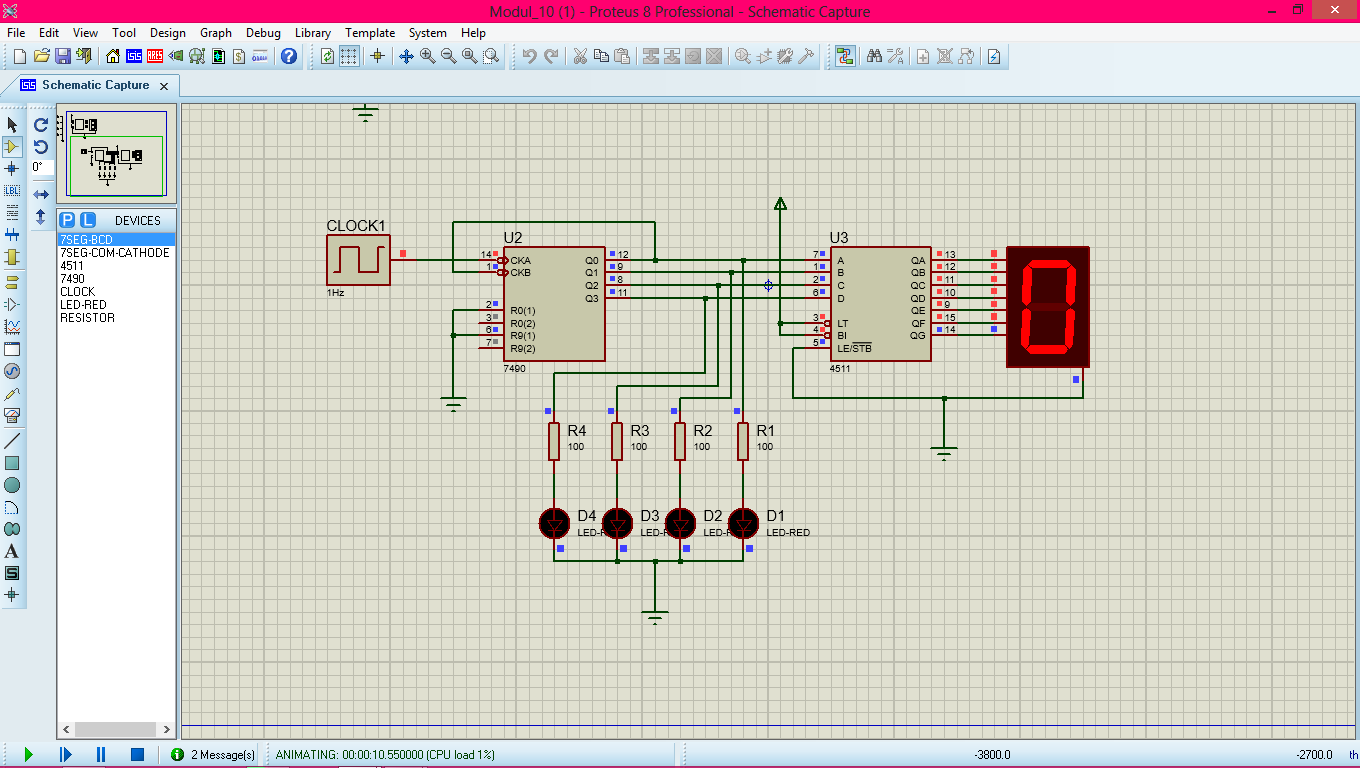
1. Tugas : cari datasheet IC 7490 dari internet ! Lihat gerbang logika penyusunnya



**Percobaan 2. Penambahan Decoder BCD-to-7segment**

1. Buat rangkaian seperti pada gambar percobaan 1

Tambahkan rangkaian dengan IC 4511 dan 7segment common cathode!



1. Isi kolom kosong pada tabel!

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Clock | Output LED | | | | Output Seven Segment |
| D1 | D2 | D3 | D4 |
| 1 | 0 | 0 | 0 | 0 | 0 |
| 2 | 1 | 0 | 0 | 0 | 1 |
| 3 | 0 | 1 | 0 | 0 | 2 |
| 4 | 1 | 1 | 0 | 0 | 3 |
| 5 | 0 | 0 | 1 | 0 | 4 |
| 6 | 1 | 0 | 1 | 0 | 5 |
| 7 | 0 | 1 | 1 | 0 | 6 |
| 8 | 1 | 1 | 1 | 0 | 7 |
| 9 | 0 | 0 | 0 | 1 | 8 |
| 10 | 1 | 0 | 0 | 1 | 9 |

1. Bandingkan percobaan 1 dan percobaan 2! Dapatkan anda melihat persamaannya ?

Jawab : Dari perbandingan antara percobaan 1 dan percobaan 2 dapat ditemukan persamaannya, yaitu pada output seven segment, hanya saja terdapat sedikit perbedaan, yaitu pada output seven segment 6 dan 9.

1. Apakah benar bahwa 7seg-BCD sama dengan BCD-to-7segment decoder? (....Yes..../ ....No....)

**Percobaan 3. Melihat di dalam BCD-to-7segment Decoder**

1. Perhatikan fungsi tabel IC 4511

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Decimal Digit | Input | | | | | Output | | | | | | | Display Output |
| LT | D | C | B | A | a | b | c | d | e | f | g |
| 0 | H | L | L | L | L | H | H | H | H | H | H | L | 0 |
| 1 | H | L | L | L | H | L | H | H | L | L | L | L | 1 |
| 2 | H | L | L | H | L | H | H | L | H | H | L | H | 2 |
| 3 | H | L | L | H | H | H | H | H | H | L | L | H | 3 |
| 4 | H | L | H | L | L | L | H | H | L | L | H | H | 4 |
| 5 | H | L | H | L | H | H | L | H | H | L | H | H | 5 |
| 6 | H | L | H | H | L | L | L | H | H | H | H | H | 6 |
| 7 | H | L | H | H | H | H | H | H | L | L | L | L | 7 |
| 8 | H | H | L | L | L | H | H | H | H | H | H | H | 8 |
| 9 | H | H | L | L | H | H | H | H | L | L | H | H | 9 |
| LT | L | X | X | X | X | H | H | H | H | H | H | H | 8 |

1. Output “a” (highlight) pada tabel, menunjukkan kerjanya LED di seven segment Common cathode dibawah.
2. Tiap output menunjukkan keadaan LED dari seven segment berbagai kondisi
3. Masing-masing LED dikendalikan oleh kombinasi gerbang logika.

Diagram logic lengkap dari decoder BCD-to-7segment ditunjukkan pada gambar berikut ini.

1. **TUGAS**

Coba buat rangkaian decoder BCD-to-7segment diatas, dan bandingkan dengan tabel kebenaran pada point no 1 !